UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/650,363	08/27/2003	Harshvardhan Sharangpani	81862P288	7318

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EXAMINER
TIMBLIN, ROBERT M

ART UNIT	PAPER NUMBER
2167	

MAIL DATE	DELIVERY MODE
06/06/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>02 April 2007</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-72* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-72* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date _____.

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

This office action corresponds to application 10/650,filed 8/27/2003

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set

forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this

application is eligible for continued examination under 37 CFR 1.114, and the fee set

forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action

has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on

4/2/2007 has been entered.

Response to Amendment

Claims 1, 67, and 71 have been amended. Accordingly, claims 1-72 are pending

prosecution.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-25 and 27-70 are rejected under 35 U.S.C. 102(b) as being anticipated

by Messenger et al. ('Messenger') (US Patent 5,051,947).

With respect to claims 1, 2, and 67, Messenger teaches A rule processor for conducting contextual searches, the processor comprising:

a plurality of M input payload search registers, wherein a data stream of content data to be searched is input into the plurality of payload search registers as character registers (abstract and figures 1 and 3).

a search execution engine (figures 1 and 4) comprising:

a search array (figures 3a-3e steps a-i) coupled to the plurality of M search registers, (abstract and figures 3-4) wherein the content in the plurality of search registers is replicated and stored in the search array (pattern register; figure 3a), wherein the search array comprises:

a plurality of M rows of search array elements coupled to a plurality of M output match lines (col. 10, line 50-55 and col. 14 line 60-65); and

a plurality of N columns of search array elements coupled to a plurality of N pattern input lines comprising a search pattern (col. 18 line 44-54 and figures 3, 4f);

a sorter coupled to the search array (search processor; figure 1 and column 3 lines 19-25) to perform one or more contextual searches on content in the search registers via parallel pattern matching (col. 5 lines 37-56) in response to executing one or more search instructions specifying the one or more pattern searches and presenting one or more patterns to the content in the search registers (col. 19 line 18-col. 20 line 18 and col. 22 lines 47-67), wherein the parallel pattern matching comprises performing

a simultaneous search within all M rows for the search patter input by the N pattern input lines in one clock period (col. 8 line 64-68).

Claims 2 and 67 contain essentially the same subject matter and therefore are rejected equally the same.

With respect to claims 3, 4, 6, 12, 15, 22, 30, and 63, Messenger teaches at least one of the one or more search instructions specifies a pattern that is to be searched against the content in the plurality of search registers and zero or more search parameters (col. 19, line 18-col. 20 line 18)

With respect to claims 5, 24, 34, 38, 45, 49, 50, 51, 61, and 64-65, Messenger teaches the portion of the pattern to be masked is specified by a mask vector to mask off specific bytes in the pattern (col. 10 lines 10-40, and figures 3a-4).

With respect to claims 7 and 8, Messenger teaches at least one of the instructions specifies a windowed-find-first-forward search (col. 24 line 15-col. 25 line 62).

With respect to claims 9-11 and 25, Messenger teaches the search execution engine generates at least one result output indicative of success in searching the content in the search registers (col. 9 lines 1-30 and *result collection* starting on col. 27).

With respect to claims 12-14, 23, and 53, Messenger teaches at least one search instruction includes a field that specifies a parameter to use to control the search or a

pointer into a memory that stores the parameter to control the search (col. 12 line 65-col. 13 line 35 and col. 10 starting at line 10).

With respect to claims 16-18 and 32, Messenger teaches a register file as a character register (abstract and figure 2.)

With respect to claims 19 and 66, Messenger teaches a memory to store one or more search instructions to be applied to data in the search registers as special-purpose processors store search conditions (col. 1 lines 61-67).

With respect to claim 20, Messenger teaches to perform searches for arbitrarily long patterns in the content in the search registers (abstract and col. 5 lines 26-36).

With respect to claims 21 and 70, Messenger teaches instruction sequencer for applying one or more search instructions to the search execution engine (col. 8 lines 64-67).

With respect to claims 27, 33, 36, 40, 41, 46,49, and 68, Messenger teaches a search array coupled to the plurality of input payload search registers, wherein content in the plurality of search registers is replicated and stored in the search array (col. 27 lines 7-53 and figures 3a-f and 15)

a sorter coupled to the search array to perform the one or more operations in response to information specified by one or more search instructions (col. 4 line 62-col. 5 line 4 and element 4 of figure 1).

With respect to claim 28, 29, 35, 39, 48, 54, and 62 Messenger teaches the sorter is coupled to receive the M match lines to perform the one or more operations associated with matches indicated by the M match lines (col. 4 line 62-col. 5 line 4, col. 18 *general purpose lines* description and element 4 of figure 1).

With respect to claim 31, Messenger teaches the information specifies a location in a memory at which the range is stored (col. 26, lines 67-64).

With respect to claims 37, and 44, Messenger teaches the second output is indicative of a number of matches in a range of the M match lines (col. 8 lines 28-39).

With respect to claims 42, 43, and 58, Messenger teaches a counter to determine a number of matches in the search array as *accumulator logic* (col. 16).

With respect to claims 47 and 48, Messenger teaches A rule engine content processor comprising:

a search array to perform pattern matching between data stored in the search array and an N byte pattern from the search instruction received on a first input, the search array having M match lines as outputs with each of the M match lines associated with a group of data stored in the array and being indicative of whether the N byte pattern matches data stored in its associated group of data stored in the search array (col. 27 lines 7-53 and figures 3a-f and 15)

a sorter coupled to receive the M match lines to perform one or more operations associated with matches indicated by the M match lines, the one or more operations being performed in response to information specified by the rule, and further wherein the sorter outputs data indicative of any match found (col. 4 line 62-col. 5 line 4, col. 18 *general purpose lines* description and element 4 of figure 1).

Claim 48 contains essentially the same subject matter as claim 47 and therefore is rejected equally the same.

With respect to claims 52 and 53, Messenger teaches the rule includes the pair of offsets (col. 28, lines 55-59).

With respect to claims 55-57 and 59, Messenger teaches 55. The rule engine content processor defined in claim 47 wherein the sorter further comprises: a priority encoder to identify a location in the search array corresponding to the M match lines corresponding to a first occurrence of a match between the pattern and data stored in the search array in relation to one side of the search array (col. 18 line 35-col. 19 line 16).

With respect to claim 60, Messenger teaches the selector has a second output indicating if a match occurred between the pattern and data in the search array (col. 4 lines 62-67).

With respect to claim 69, Messenger teaches loading the search registers is performed to store, replicate, and interleave data such that data for one row is stored in an adjacent row in shifted form col. 7 line64-67 and figure 3a).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 71-72 are rejected under 35 U.S.C. 103(a) as being unpatentable over Messenger as applied to claims 1-70 above and further in view of Herman et al. ('Herman' hereinafter) (US Patent 5,050,075).

With respect to claim 71, Messenger teaches A process for performing contextual searches in a pipelined fashion, the process comprising:

fetching a rule from a rule memory (col. 1 lines 62-67).

executing one or more search operations on values in a plurality of input payload search registers storing content (abstract).

performing sort operations on results of executing the one or more search operations as generating results in a nested arrangement (col. 4 lines 14-25).

Messenger fails to teach decoding the rule and assembling indirect fields

Herman, however, teaches decoding the rule and assembling indirect fields as instruction decode stage (col. 10, lines 22-27) to decode instructions.

It would have been obvious to one of ordinary skill in the data processing art at the time of the present invention to combine the teachings of the cited references because Herman's teaching would have provided Messenger's system with decoding instructions.

With respect to claim 72, Messenger teaches four stage pipeline with a search array and a sorter (col. 5 lines45-56).

Response to Arguments

Applicant's arguments filed 4/2/2007 have been fully considered but they are not persuasive.

Applicant argues on page 21 that the system of Messenger does not relate at all to parallel processing. The Examiner respectfully disagrees as Messenger teaches his system being able to handle multiple queries simultaneously, which corresponds, to a parallel matching technique as described.

Remaining arguments are rendered moot, as Applicant's amendments have necessitated a new ground of rejection in view of Messenger as indicated in the

preceding rejection.   The Examiner submits that Messenger teaches the claims as amended.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent 5,586,288 to Dahlberg et al.   The subject matter disclosed therein pertains to the pending claims (i.e. pattern matching).
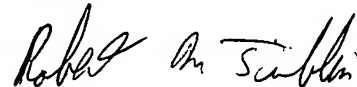
Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert M. Timblin whose telephone number is 571-272-5627. The examiner can normally be reached on M-F 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John R. Cottingham can be reached on 571-272-7079.   The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Robert M. Timblin

Patent Examiner AU 2167
5/30/2007

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